

CD-Recorder

CDD2600



- ' User's manual
- f Manuel d'utilisation
- d Benutzerhandbuch
- Gebruikershandleiding
- i Guida dell'Utente
- e Guia del usuario

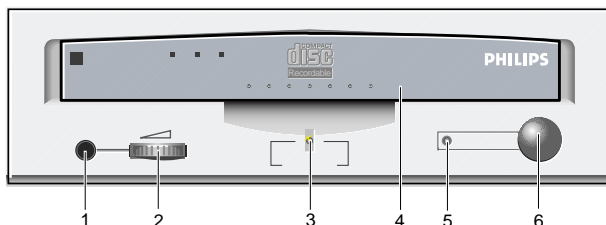


PHILIPS

CDD 2600 CD - Compact Disc Recorder

FIG.1

FRONT VIEW



REAR VIEW

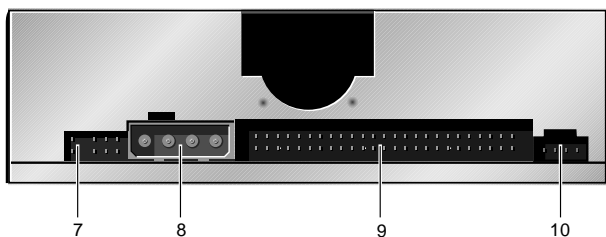


FIG.1 FRONT VIEW

1. Headphone plug
2. Headphone volume control
3. Write indicator
4. Disc Tray
5. Disc In/Read/Error indicator
6. Open/Close

ABB.1 VORDERANSICHT

1. Anschlußbuchse Kopfhörer
2. Lautstärke Kopfhörer
3. Schreibanzeige
4. Schublade
5. Diskette ein/Lesen/Fehler anzeige
6. Open/Close Taste

FIG.1 PARTE ANTERIORE

1. Presa cuffie
2. Controllo volume cuffie
3. Indicatore di scrittura
4. Cassetto del disco
5. Indicatore disco inserito/Leggi/Errore
6. Tasto Apri/Chiudi

FIG.1 REAR VIEW

7. Jumperblock
8. Host DC power connector
9. SCSI connector
10. Audio Line Out connector

RÜCKANSICHT

7. Jumperblock
8. Host Gleichstromnetzanschluß
9. SCSI Connector
10. Tonanschluß Aus-Connector

PARTE POSTERIORE

7. Blocco Jumpers
8. Connettore alimentazione DC
9. Connettore SCSI
10. Connettore Line Out Audio

FIG.1 PANNEAU AVANT

1. Prise pour casque
2. Commande du volume du casque
3. Témoin lumineux d'enregistrement
4. Tiroir à disque
5. Témoin disque/lecture/erreur
6. Touche ouvrir/fermer

FIG.1 VOORKANT

1. Hoofdtelefoonaansluiting
2. Volumeregeling hoofdtelefoon
3. Schrijfindicator
4. Disc-lade
5. Disc aanwezig/lezen/foutindicator
6. Openen/sluiten-toets

FIG.1 VISTA FRONTAL

1. Clavija de los auriculares
2. Control del volumen de los auriculares C.D.
3. Indicador de escritura
4. Bandeja del Disco
5. Indicador de Disco introducido/Lectura/Error
6. Botón de Apertura/Cierre

PANNEAU ARRIERE

7. Cavaliers
8. Connecteur au bloc d'alimentation C.C.hôte
9. Connecteur SCSI
10. Connecteur de sortie de ligne audio

ACHTERKANT

7. Jumper-blok
8. Voedingsconnector host computer
9. SCSI connector
10. Audio-connector lijnuitgang

VISTA POSTERIOR

7. Bloque de conectores
8. Conector de alimentación
9. Conector SCSI
10. Conector de salida de Línea de Audio

WARNING

This device complies with Part 15 of the FCC (U.S.A.) Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can be used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning this equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT

Any change or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the user's authority to operate such equipment.

FOR EUROPE



“The CDD2600 is in conformity with the EMC directive and low-voltage directive.”

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LASER SAFETY

This unit employs a laser. Do not remove the cover or attempt to service this device when connected due to the possibility of eye damage.

LASER-SICHERHEIT

In das Gerät ist ein Laser eingebaut. Nehmen Sie die Abdeckung nicht ab und versuchen Sie nicht, das Gerät zu reparieren, solange es angeschlossen ist. Es besteht die Gefahr einer Augenverletzung.

CAUTION

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS LASER RADIATION EXPOSURE.

WARNUNG

DIE VORNAHME VON REGELUNGEN ODER EINSTELLUNGEN ODER DIE DURCHFÜHRUNG VON VERFAHREN, DIE NICHT IN DIESEM DOKUMENT (DIESER BESCHREIBUNG; IM NACHSTEHENDEN TEXT) ANGEGBEN SIND, KANN EINE GEFÄHRLICHE EINWIRKUNG VON LASERSTRAHLUNG ZUR FOLGE HABEN.

**CLASS 1
LASER PRODUCT**

**LUOKAN I
LASERLAITE**

**KLASS 1
LASERAPPARAT**

**KLASSE 1
LASER-PRODUKT**

| | |
|-----------------|---|
| CAUTION | INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM |
| VARO! | AVATTAESSA OLET ALTIINA NÄKYMÄTTÖMÄLLE LASER SÄTTEILYLLE ÄLÄ KATSO SÄTEESEN |
| WARNING | OSYNLIG LASERSTRÄLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÄLEN |
| ADVERSEL | USYNLIG LASERSTRÄLING VED ÅBNING. UNGDÅ UNSAETTELSE FOR STRÄLING |
| DANGER | INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM |
| VORSICHT | INSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN |

LASER

| | |
|-----------------|--------------------------------|
| Type | Semiconductor laser GaAlAs |
| Wave length | 775~795 nm (at 25° C) |
| Output Power | 2,5 mW (Read) 35 mW (Write) |
| Beam divergence | 60 degree. |

Handling Static-Sensitive devices

This CD-Recorder drive, like all electronic equipment, is static sensitive.

Please take the proper precautions when handling the drive.

Avoid touching the SCSI connector pins as well as the audio connector pins and the jumper pins.

Keep the drive in its conductive wrapping until you are ready to install the drive in your computer.

Installing the drive

- In order to mount the drive inside your PC (or other type of computer), locate a free horizontal 5.25" bay and follow the instructions, as provided with your computer systems, for installing the drive.
- In order to prevent interference between the CD-Recorder drive and the computer, please make sure to mount the drive using all 4 mounting screws.

Safety Precautions

Europe: This drive shall be installed only with an EN60950 (IEC950) approved Power supply.

USA/Canada: This drive is for use only with IBM compatible UL listed Personal Computers or Macintosh UL listed workstations weighing less than 18 kg.

INSTALLATION

Host interface connections

Connect the internal SCSI flatcable to the SCSI interface card of your host. Connect the other end to one of the SCSI connectors at the rear of the CD-Recorder drive.

Make sure to select a free SCSI address via the jumpers on the back of the unit

Then connect the power cable in your PC to the plug on the drive (see item 8 of the rear view, fig.1).

SUMMARY OF CONTROLS AND CONNECTIONS

Front view (See flap Fig.1)

1. HEADPHONE PLUG

Connect your headphone to listen to CD-DA discs (or tracks).

2. HEADPHONE VOLUME CONTROL

Turn the wheel to the right to increase the audio volume of your headphone.

3. WRITE INDICATOR

Lights "orange" when writing of a disc occurs.
Flashes "orange" during write emulation.

4. DISC TRAY

5. DISC IN/READ/ERROR indicator (dual color LED)

Lights "green" when a disc is present. Flashes "green" asymmetrically when data is being transferred from disc. Flashes "green" symmetrically when starting up a disc. Lights "red" upon error (e.g. after failed selftest).

6. OPEN/CLOSE KEY

Press the OPEN/CLOSE key to open the disc loading tray. To close the disc loading tray, push gently at the front of the tray or press the Open/Close key.

SUMMARY OF CONTROLS AND CONNECTIONS

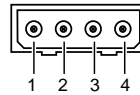
Rear view (See flap Fig.1)

7. JUMPERBLOCK

With jumpers 1 to 3 the SCSI address is selected.
Jumper 4 is for termination selection.

8. HOST DC POWER CONNECTOR (type AMP 00641737-1)

- 1: +12V
- 2: GND
- 3: GND
- 4: +5V

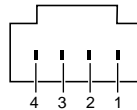


9. SCSI CONNECTOR (type MOLEX 70247-5005)

50 pin SCSI flatcable connector.

10. Audio line out connector (type: MOLEX 70555-0003)

- 1: Left
- 2: GND
- 3: GND
- 4: Right



Loader

11. SERVICE FLAP

For service applications only.

Not to be opened by unauthorised people without further instructions from your supplier.

OPERATING/TESTING YOUR CD-RECORDABLE SYSTEM

Copyright Statement

It is a criminal offence, under applicable copyrights laws, to make unauthorised copies of copyright-protected material, including computer programs, films, broadcasts and sound recordings. This equipment should not be used for such purposes.

Switching on

When you have successfully installed the drive and established all connections, it is now time to switch on the host.

Loading and unloading a disc

Follow the instructions below. (see Fig.1)

1. To open the tray: Press the Open/Close key (6).
2. Load a (CD-R) disc, with the label facing upwards. The tray accommodates discs with 8 cm diameter (CD-Single) or the more usual 12 cm discs.
3. To close the tray, either push gently at the front of the tray or press the Open/Close key (6).

Note: for best results, use only empty discs qualified by Philips (PDO 63CDR or PDO 74CDR).

Note: don't use general purpose commercial head cleaning discs.

Switching off

Do not switch off the drive via the host after a successful write : either fixate the disc or eject it, else an incompatible disc is made.

OPERATING/TESTING

YOUR CD-RECORDABLE SYSTEM

Operating the CD-Recorder on the computer

The following lists the supported SCSI commands. An extensive description of the total command set is available on request.

MESSAGES

* Following messages are implemented in the CD-Recorder:

In = Target to initiator

| Code | Description Directions |
|------|------------------------|
| 00h | command complete in |
| 02h | save data pointer in |
| 04h | disconnect in |
| 06h | abort out |
| 07h | message reject in out |
| 08h | no operation out |
| 0Ch | bus device reset out |
| 80h+ | identify in out |

Out = Initiator to target

* The following SCSI commands are implemented in the CD-Recorder: Group 0 commands:

| Opcode ^a | Command |
|---------------------|------------------------------|
| 00 | Test Unit Ready |
| 01 | Rezero Unit |
| 03 | Request Sense |
| 08 | Read |
| 0A | Write |
| 0B | Seek |
| 12 | Inquiry |
| 15 | Mode Select |
| 16 | Reserve |
| 17 | Release |
| 18 | Copy |
| 1A | Mode Sense |
| 1B | Start / Stop Unit |
| 1C | Receive Diagnostic Results |
| 1D | Send Diagnostics |
| 1E | Prevent/Allow medium removal |

a. Opcode in Hexadecimal format*

OPERATING/TESTING YOUR CD-RECORDABLE SYSTEM

Group 1 & 2 - ten bytes commands :

| Opcode ¹ | Command |
|---------------------|--------------------------|
| 25 | Read Capacity |
| 28 | Read |
| 2A | Write |
| 2B | Seek |
| 2F | Verify |
| 35 | Flush Cache |
| 3B | Write Buffer |
| 3C | Read Buffer |
| 42 | Read Sub Channel |
| 43 | Read Disc info |
| 45 | Play Audio |
| 47 | Play Audio MSF |
| 48 | Play Audio Track / Index |
| 4B | Pause Resume |
| 55 | Mode Select |
| 5A | Mode Sense |

* Vendor Unique commands :

| Opcode ¹ | Command |
|---------------------|-------------------------------------|
| D1 | Read Disc ID |
| D2 | Read OPC |
| D3 | Write OPC |
| E2 | First Writable address |
| E3 | Format track |
| E4 | Reserve track |
| E5 | Read Track Info |
| E6 | Write Track |
| E7 | Medium Load/Unload |
| E8 | Finish Track |
| E9 | Fixation (write Leadin and Leadout) |
| EB | Send Absorption Control Errors |
| EC | Recover |
| ED | Write |
| EE | Read Session Info |

ADDITIONAL INFORMATION

Care of discs

Whenever a disc is not in the tray or the drive, protect it from dust, ink, or other contaminant's. Handle discs only by the outer and inner edges. When loading the disc, allow time for the door to open and then gently insert the disc.

Empty discs are separately available through your dealer.

Technical data

Performance

| | |
|---|-----------------------|
| Capacity | |
| 120mm disc | 600 Mbytes/700 Mbytes |
| 80mm disc | 200 Mbytes |
| Access time average 1/3 data ⁽¹⁾ | 325 msec. |
| Access time max ⁽¹⁾ | < 650 msec. |

(1) After spin up, including latency and command overhead, at highest speed (only valid for reading).

| | |
|---|--|
| Data-transfer-rate (recording/reading) | 352,8 Kbytes/sec sustained (double speed, mode 2 data) 176,3 Kbytes/sec sustained (single speed, mode 2 data) |
| Data-transfer-rate (read only) | 1145 Kbytes/sec (6x speed, mode 2 data) |
| Max. burst rate | ≥ 1,4 Mbytes/sec |
| Interface | SCSI 2 |
| Form factor | 5,25" Half Height |
| Data integrity from drive, (new discs) | 10 ⁻¹⁶ |
| Data buffer | 1Mb |
| Disc loading | Tray (motorised) |

ADDITIONAL INFORMATION

| | |
|--------------------------|---|
| Dimensions | |
| Height | 41.5 mm |
| Width | 146 mm |
| Depth | 206 mm |
| Weight max. | 1 kg |
| Power dissipation | max. 8W |
| Environmental | |
| Operating temp (1) | 5 to 40° C |
| Non operating temp | -25 to 70° C |
| Reliability | |
| MTBF (hours) | 30.000 POH |
| Media | CD-R conf. "Orange Book" part II |
| Certification | FCC Compliance: Class B. UL, CSA,CEBEC. FDA-CDRH. |

(1) Specifications for the "under pressure" case (incoming air flow through the front bezel) : A flow of at least 2 l/sec. of air at maximum 40°, must be realised. This will be achieved by realising at least -180 Pascal of pressure difference between inside the apparatus and outside.

Specifications for the "over pressure" case (outgoing air flow through the front bezel) : A flow of at least 2 l/sec. of air at maximum 40°, must be realised. This will be achieved by realising at least +180 Pascal of pressure difference between inside the apparatus and outside. Additionally, the measured temperature of the bottom plate of the drive must not exceed 50° C.

Remark: under an environmental temperature of the drive between 5° to 30° C no airflow is necessary.

ADDITIONAL INFORMATION

Electrical interface (front of drive)

- Headphone Jack.
- RMS OUTPUT voltage: 3,1 V at 600 r .
- Signal-to-Noise Ratio: 80 dB typ. A weighted.

Electrical interface (rear of drive)

- Audio line out: RMS OUTPUT voltage 1V at 470 .
- Signal-to-Noise Ratio: 80 dB typ. A weighted.
- Data interface: 50 pin SCSI flatcable (see below).
- Power Supply:

- voltage requirements: +12V ($\pm 5\%$) +5V ($\pm 5\%$)
- current requirements: +12V 160 mA typ.
200 mA max.
- +5V 1 A typ.
1,5 A max.

Audio performance

Audio specification for line out:

| | On pressed CD | On recordable CD |
|-----------------------------------|--------------------------|--------------------------|
| Output Voltage | 1 V rms | 1 V rms |
| Unbalance | max 0.25 dB | max 0.25 dB |
| Output Impedance | 100 Ohm | 100 Ohm |
| Amplitude Linearity | 1 dB (20 Hz - 20 kHz) | 2 dB (20 Hz - 16 kHz) |
| S/N-ratio | 82 dB (87 dB A-wtg) | 80 dB (85 dB A-wtg) |
| Total Harmonic Distortion + Noise | 65 dB (1kHz) | 55 dB (1kHz) |
| Outband attenuation | min. 50 dB above 25 kHz | min. 50 dB above 25 kHz |
| Channel separation | min. 70 dB (20 kHz) | min. 65 dB (16 kHz) |
| Muting level during random access | min. 90 dB (BW = 20 kHz) | min. 90 dB (BW = 20 kHz) |
| | | |

ADDITIONAL INFORMATION

Audio specifications for headphones

| | On pressed CD | On recordable CD |
|--------------------------------------|--------------------------|--------------------------|
| Output Voltage (max volume) | 3.1 V rms | 1 V rms |
| Unbalance | max 0.25 dB | max 0.25 dB |
| Output Impedance | 120 Ohm | 120 Ohm |
| Amplitude Linearity | 1.5 dB (20 Hz - 20 kHz) | 1.5 dB (20 Hz - 16 kHz) |
| S/N-ratio | 86 dB (88 dB A-wtg) | 80 dB (85 dB A-wtg) |
| Total Harmonic Distortion + Noise | 60 dB | 45 dB |
| Outband attenuation | min. 50 dB above 25 kHz | min. 50 dB above 25 kHz |
| Channel separation | min. 67 dB (20 kHz) | min. 65 dB (16 kHz) |
| Muting level during random access | min. 90 dB (BW = 20 kHz) | min. 90 dB (BW = 20 kHz) |
| Note 1: | | |

The somewhat reduced audio quality when playing back audio tracks on CD-R discs has NO RELATION to the DIGITAL QUALITY of the audio tracks as they have been recorded onto the CD-R disc.

Note 2:

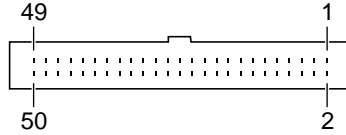
This phenomena is caused by the playback decoding electronics inside the CD-R drive, when playing audio tracks on CD-R discs (caused by different trackfollowing algorithm on the ATIP Absolute Time in Pregroove as exists only on a CD-R disc): the system will fall back to the lesser quality decoding known as 1-time oversampling. On pressed discs, the electronics uses the standard 4-times oversampling algorithm.

Note 3:

The analog output volume as specified above applies if the electronic attenuation in the playback circuitry inside the drive is non operational, i.e. the electronic volumesetting is at 100%. However as is being recommended by the generic SCSI standard, the electronic attenuation is set to a default value of 25% at startup, meaning that only 25% of the maximum analog volume is supplied to the outputs. This attenuation can be changed by the appropriate software application.

ADDITIONAL INFORMATION

Interface Pin Table



| SIGNAL | PIN NUMBER | SIGNAL | PIN NUMBER |
|--------|------------|----------|------------|
| -DB(O) | 02 | *TERMPWR | 26 |
| -DB(1) | 04 | GROUND | 28 |
| -DB(2) | 06 | GROUND | 30 |
| -DB(3) | 08 | -ATN | 32 |
| -DB(4) | 10 | GROUND | 34 |
| -DB(5) | 12 | -BSY | 36 |
| -DB(6) | 14 | -ACK | 38 |
| -DB(7) | 16 | -RST | 40 |
| -DB(P) | 18 | -MSG | 42 |
| GROUND | 20 | -SEL | 44 |
| GROUND | 22 | -C/D | 46 |
| GROUND | 24 | -REQ | 48 |
| | | -I/O | 50 |

* Note: This pin provides the terminator power (plus 5 volts).

Note: All odd pins except pin 25 shall be connected to ground.
Pin 25 should be left open but may be connected to ground.

ADDITIONAL INFORMATION

Jumper Settings

JUMPERS 1 TO 3 can be used for setting SCSI addresses.

Remark: Jumper detection only by Power on or SCSI hand Reset.
Drive will always supply TERM POWER.
Drive will always generate and check parity on SCSI.

| ID | 0 | 1 | 2 |
|-------------|---|---|---|
| ADDRESS 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 2 | 0 | 1 | 0 |
| 3 | 1 | 1 | 0 |
| (DEFAULT) 4 | 0 | 0 | 1 |
| 5 | 1 | 0 | 1 |
| 6 | 0 | 1 | 1 |
| 7 | 1 | 1 | 1 |

| | |
|------|---|
| TERM | 1 = Termination ON (DEFAULT) 0 = Termination OFF |
|------|---|

Auto selftest

EXECUTION

- Selftest will be activated by pushing and holding OPEN/CLOSE button for one complete Open/Close cycle of tray.
- At Host command : Send diagnostics.

ADDITIONAL INFORMATION

VISIBLE EFFECTS

- At total selftest start:

Green, orange and red will respectively light up for about 200 msec. this will be repeated 3 times.

- At start of each individual test:

The two LEDs will go on for 0.5 sec. and then the test starts.

- During the test:

The two LEDs remain on.

- At the end of an individual test: if the test was unsuccessful, the red error led will go on for 1 sec. If the test was successful, the green led will go on.

- At the end of the selftest:

During 5 seconds, the orange and the green led will flash if the whole test was OK. In case of an error, the orange and the red light will flash during 5 seconds.

INDIVIDUAL TESTS

- Test internal processor RAM
- Test external SRAM
- Test EPROM
- Test DSP interface
- Test DRAM
- Test SCSI interface
- Test CDB2 interface
- Test datapath
- Test SRAM CDB2

You can reach Philips the following ways (in order of prefer-

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